

**ABSTRACT**

5       Methods for increasing the concentration of antioxidants during senescence and curing of tobacco leaves include application of a chemical solution. The methods include spraying the solution onto the tobacco plant prior to harvest and/or applying the chemical solution to the soil surrounding roots of growing tobacco plants. The application of the chemical solution preferably occurs between topping and harvest, and is optimized to stimulate the production of antioxidants and interfere with the formation of TSNA's during curing. The tobacco can be burley tobacco subjected to air curing.